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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/665,767	09/20/2000	James Claude Carnahan	RD-27,100	8695

25101 7590 10/27/2003

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EXAMINER	
CYGAN, MICHAEL T	

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/665,767	CARNAHAN ET AL.	
	Examiner	Art Unit	
	Michael Cygan	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,5,7,8,10-21,23-29,31,34-36 and 38-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,4,5,7,8,10-21,23-29 and 38-47* is/are allowed.

6)☒ Claim(s) *31 and 34-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *08 February 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 August 2003 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 31 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miroslav (US 6,296,771 B1) in view of Allcock ("Contemporary Polymer Chemistry", 1990), in view of Drukier (US 5,854,084), in view of Connelly (US 5,938,932), and in view of Howie (US 5,129,723). Miroslav discloses an analysis system and method for polymer weight determination which comprises injecting

a known amount of sample into an analysis system containing a GPC (size-exclusive; see column 1, lines 48-49; column 14, lines 52-64; column 18, lines 47-48) column, an in-line concentration detector and a molar mass detector (such as a differential refractive index detector and a light scattering detector, see column 20, lines 26-39); wherein a high molecular weight fraction is separated with minimal dispersion from monomer components (column 21, line 62 through column 22, line 3), analyzed to determine concentration and molar mass, and an average molecular weight derived therefrom (column 21, lines 1-22; average molecular weights are inherently calculated from concentration and molecular mass). The average molecular weight may be number-averaged or weight averaged; see column 21, lines 4-16. The total analysis time may be 60 seconds (column 12, lines 33-36). A plurality of samples are provided from a sample preparation array (Figure 5) and analysis is conducted automatically with an autoinjector (column 12, lines 1-25), a solvent preparation and delivery system (Figure 3 and description at columns 7-11, particularly column 7, lines 47-49), a chromatographic column [102], detectors [103] (such as a differential refractive index detector and a light scattering detector, see column 20, lines 26-39), and a computer [222]. Miroslav discloses serial (sequential) detection at column 20, lines 23-39 and column 21, lines 37-61. Flow can be diverted to a detector

(see Figure 7 and column 20, lines 5-25). With respect to claims 6-8, Miroslav discloses the sample containing a solvent chosen from a group comprising "typical solvents" such as tetrahydrofuran or toluene. See entire document.

Miroslav teaches the claimed invention except for the sample being the product of a polymer reaction between a diphenyl carbonate and a dihydric phenol, a rapid mixing cell, and for an off-line molar mass detector not in a column-concentration detector-waste flow path.

With respect to the sample being the product of a polymer reaction between a diphenyl carbonate and a dihydric phenol, Miroslav teaches only that the disclosed invention is "for characterizing combinatorial libraries of material samples such as polymer samples, and particularly, libraries of or derived from reaction mixtures such as polymerization product mixtures, to facilitate the discovery of commercially important materials". Allcock teaches that polycarbonates "of particular importance" are formed by reaction of bisphenol A (a dihydric phenol with the chemical formula of 2,2-bis(4-hydroxyphenyl)propane) and diphenyl carbonate, (and inherently, an appropriate solvent) see page 29. Polymers (chains of many repeating chemical units) thus made would inherently comprise at least two bisphenol A units. It would have been obvious to one having ordinary skill in the art at the time

the invention was made to use a product of a polymer reaction between a diphenyl carbonate and a dihydric phenol as taught by Allcock in the invention of Miroslav as a sample for analysis in order to provide advantageous use of the invention of Miroslav, since Allcock teaches that such a product is "of particular importance", and Miroslav states that his invention is to be used with polymerization reaction product mixtures having commercial importance.

With respect to a molar mass detector not in the column-concentration detector-waste flow path, Connelly teaches the use of a molar mass detector [510] not in a column [502]- concentration detector [516]-waste (output of [512]) flow path; see Figure 5, column 7 lines 50-64, and column 8 line 56 through column 9 line 59. The flow path is through column [502], sequential detector [516], and sequential waste reservoir (after passage through ELSD 512), and through a splitter from the detector [516] through a mass detector [510] (off of the aforementioned sequential line) leading to waste reservoir. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a split analysis path as taught by Connelly in the invention taught by Miroslav to send only the desired amount of sample flow to the molar mass detector, since Connelly teaches that such splitting is

advantageous for substantially contemporaneous, high-throughput detection (column 2, lines 58-60).

With respect to recitation of a "rapid mixing cell", Howie teaches the use of a rapid mixing cell [21] for use with a light scattering detector receiving samples from a HPLC; see column 6 line 29 through column 7 line 11. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a rapid mixing cell as taught by Howie in the invention taught by Miroslav to assist in detection of the sample, since Howie teaches that such a mixer is necessary to recombine any sample broadened by passage through the connecting tubing.

With respect to offline techniques, at column 14, lines 3-6, Drukier (US 5,854,084) states that there are "three main modalities for analytical use of HPLC columns, The detection is done either inflight, or is done after the effluent is caught in a fraction collector"; further, at lines 36-38, Drukier supplies motivation for selection of either technique as an alternative, stating that the "relative merits of on-line and off-line monitoring of the chromatographic process may be evaluated in terms of cost and throughput". It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an offline molar mass detector as taught by Drukier in the invention taught by Miroslav to perform molar mass measurement, since Drukier states that the "relative merits of

on-line and off-line monitoring of the chromatographic process may be evaluated in terms of cost and throughput".

Allowable Subject Matter

3. Claims 1, 4, 5, 7, 8, 10-21, 23-29, and 38-47 are allowed.

4. The following is a statement of reasons for the indication of allowable subject matter: the prior art neither disclosed nor fairly teaches a method for determination of polymer weight of the claimed reaction product wherein a portion of a chromatographically separated analytical sample is passed through a concentration detector, then a portion is diverted to a molar mass detector while the remainder is disposed to waste without further processing, in combination with the other recited limitations of the claims.

Response to Arguments

5. Applicant's arguments with respect to claims 31 and 34-36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Provisional application 60/157,338, previously faxed to applicant's representative, is again made of record. Hindsgaul (US 6,627,453 B1) discloses the use of a detector not in a column-waste flow stream.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cygan whose telephone number is 703-305-0846. The examiner can normally be reached on 8:30-6 M-Th, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 703-305-4816. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Michael Cygan
Examiner
Art Unit 2855